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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,624	08/05/2003	Takashi Kurumisawa	116485	5362

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EXAMINER

BODDIE, WILLIAM

ART UNIT PAPER NUMBER

2674

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/633,624

Applicant(s)

KURUMISAWA ET AL.

Examiner

William Boddie

Art Unit

2674

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 August 2003.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-9 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 05 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7-5-05  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Specification***

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: IMAGE DISPLAY DEVICE, METHOD AND PROGRAM ENABLING A WIDER VIEWING ANGLE.

### ***Claim Rejections - 35 USC § 101***

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claim 9 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 9 is merely drawn to a computer program and not a program stored on a recordable medium, as such it does not qualify as statutory subject matter.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greier et al. (US 6,801,220) in view of Amagami et al. (US 5,402,149).

**With respect to claim 1**, Greier discloses, an image display device, comprising: a display unit; a viewing angle range adjustment device that sets grayscale values of each pixel of image data so that the grayscale values of adjacent pixels in a vertical direction of image data are different from each other (for the purposes of claim analysis the terms 'grayscale values' and 'luminance' are considered linked, i.e. different grayscale values are akin to different luminance values [applicant uses the terms interchangeably para. 56-57]. col. 13, lines 11-32, also note the checkerboard pattern of luminance in fig. 20); and a display device for displaying the image data on the display unit (112 in fig. 3).

Greier does not expressly disclose, a resolution conversion device that makes a plurality of pixels from each pixel of original image data and generates resolution-converted image data including the plurality of made pixels.

Amagami discloses, a resolution conversion device that makes a plurality of pixels from each pixel of original image data and generates resolution-converted image data including the plurality of made pixels (note fig. 46, which discloses a resolution conversion with new pixels being formed from the original data).

Amagami and Greier are analogous art because they are from the same field of endeavor namely, matrix displays and methods of displaying data.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the driver of Greier with the resolution conversion driver of Amagami which would then pass the resolution converted data to the wider viewing angle means of Greier.

The motivation for doing so would have been to effectively display low-resolution data on a high-resolution screen (Amagami, col. 1, lines 16-25)

Therefore it would have been obvious to combine Greier with Amagami for the benefit of effectively displaying low-res data on a high-res screen to obtain the invention as specified in claim 1.

**With respect to claim 2,** Greier and Amagami disclose, the image display device according to claim 1 (see above).

Greier further discloses, the viewing angle range adjustment device setting the different between grayscale values of the adjacent pixels in the vertical direction to be more than a predetermined grayscale value (col. 18, lines 55-58, discuss determining an ideal difference between grayscale values).

**With respect to claim 3,** Greier and Amagami disclose, the image display device according to claim 1 (see above).

Greier further discloses, the viewing angle range adjustment device setting the grayscale values of each of the pixels based on display characteristics of the display unit (col. 10, lines 15-17).

**With respect to claim 4,** Greier and Amagami disclose, the image display device according to claim 3 (see above).

Greier further discloses, the viewing angle range adjustment device comprising: a lookup table that stores the display characteristics of the display unit (col. 15, lines 12-14); and a device that determines the grayscale value of each pixel with reference to the lookup table (col. 15, lines 14-26).

The motivation for doing so would have been to enable display of both low-resolution and high-resolution data on a high-resolution screen (Amagami, col. 1, lines 16-25)

Therefore it would have been obvious to combine Greier with Amagami for the benefit of effectively displaying low-res data on a high-res screen to obtain the invention as specified in claim 1.

**With respect to claim 2,** Greier and Amagami disclose, the image display device according to claim 1 (see above).

Greier further discloses, the viewing angle range adjustment device setting the different between grayscale values of the adjacent pixels in the vertical direction to be more than a predetermined grayscale value (col. 18, lines 55-58, discuss determining an ideal difference between grayscale values).

**With respect to claim 3,** Greier and Amagami disclose, the image display device according to claim 1 (see above).

Greier further discloses, the viewing angle range adjustment device setting the grayscale values of each of the pixels based on display characteristics of the display unit (col. 10, lines 15-17).

**With respect to claim 4,** Greier and Amagami disclose, the image display device according to claim 3 (see above).

Greier further discloses, the viewing angle range adjustment device comprising: a lookup table that stores the display characteristics of the display unit (col. 15, lines 12-

14); and a device that determines the grayscale value of each pixel with reference to the lookup table (col. 15, lines 14-26).

**With respect to claim 5**, Greier and Amagami disclose, the image display device according to claim 1 (see above).

Greier further discloses, the viewing angle range adjustment device setting the grayscale values of sub pixels constituting each pixel of the resolution-converted image data such that adjacent sub pixels in the vertical direction have different grayscale values (note fig. 20, and the individual sub pixels that have different grayscales between vertically adjacent sub pixels).

**With respect to claim 6**, Greier and Amagami disclose, the image display device according to claim 5 (see above).

Greier further disclose, the viewing angle range adjustment device comprising: a lookup table that stores display characteristics of the display unit for each color of R, G, and B; and a device that determines the grayscale values of the sub pixels for each color with reference to the lookup table (col. 19, lines 37-40, which details operations based on stored RGB values).

**With respect to claim 7**, Greier and Amagami disclose, the image display device according to claim 1 (see above).

Greier further discloses, an input unit that receives a command to select one of a wide viewing angle range and a narrow viewing angle range, the display device displays the resolution-converted image data adjusted by the viewing angle range mode is

selected and displays the resolution-converted mode image data not adjusted by the viewing angle range mode is selected (col. 10, lines 1-3).

**With respect to claim 8**, as claim 8 is simply a method claim and offers no new limitations over claim 1, claim 8 is rejected on the same merits as recited above in the rejection of claim 1.

**With respect to claim 9**, Greier discloses, a computer program executing a viewing angle range adjustment (col. 21, lines 31-53).

While Amagami does not expressly disclose a computer program for executing the resolution conversion it would have been obvious to execute the resolution conversion of Amagami with a computer program as disclosed by Greier. The motivation would have been a lower cost of mass production for a computer program versus a hardware embodiment.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kim et al. (US 6,067,063) achieves a wider viewing angle of a liquid crystal display by manipulating the gray level of the displayed data.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Will Boddie whose telephone number is (571) 272-0666. The examiner can normally be reached on Monday through Friday, 8:00 - 4:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 2674

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wlb  
10-12-05



REGINA LIANG  
PRIMARY EXAMINER